accurate calculations on a uniform system, combine the whole of our information relating to them, we should call this body, not Halley's, but Rosenberger's comet."

It must always be a subject of great regret that with this successful effort Rosenberger should have terminated his labours in astronomy. It does not appear that he published any further scientific work from 1836 to the day of his death.

He gave lectures on mathematics and astronomy regularly, though as a rule but to a small circle of students. Apart from his educational activity, he rendered valuable services to the university and faculty by the readiness with which he undertook manifold administrative functions, as well as by the conscientiousness, precision, and ability with which he performed them. He repeatedly and creditably filled the office of Dean of the Philosophical Faculty. For some period of his life at Halle he took a prominent part in politics, but of late years he seldom appeared in public except to attend some academical function.

On May 13, 1886, he celebrated the rare event of the sixtieth anniversary of his appointment as a professor, on which occasion the Emperor bestowed on him the second class order of the Red Eagle. Professor Rosenberger never married. At the time of his death in 1890, January 23, at the age of nearly ninety years, he was the senior Professor of the University of Halle and of the Philosophical Faculty.

He was elected an Associate of this Society April 10, 1835.

Herman Schultz was born on July 7, 1823, at Nygvarn, in the Swedish province of Södermanland, where his father had a manufactory. His early education was received at home, after which he entered the Lycée of Upsala, and in 1844 he took his degree as Bachelor of the University of that city. He received a Doctor's degree in 1855, and in the following year was nominated 'Professor agrégé' at the University. In 1859 he became Assistant Professor, and was nominated Observer at the Astronomical Observatory. Finally, in 1878 he was appointed ordinary Professor of Astronomy, and Director of the Observatory as successor to Dr. Svanberg.

In the year 1860 the Observatory of Upsala was furnished with an equatorial refractor by Steinheil, the object-glass of which was 24 centimètres diameter, and of 13 feet focal length. The optical part of the instrument was of high excellence, but all the mechanical part of the mounting was very inferior, and necessitated frequent alterations to render the telescope fit for work. With this instrument Schultz made a large number of valuable observations.

After becoming Director, Schultz caused many important alterations and improvements to be made in the buildings of the Observatory. The openings in the transit-room and the room for the prime vertical instrument were much enlarged. Two

1891MNRAS..51..205.

small observatories were erected in the garden for the use of students. By means of some funds given to the Observatory by one of his predecessors and by a friend, as well as by a grant from the Swedish Government, Schultz was enabled to enrich the Observatory with several important instruments, including an excellent clock by Hohwü, two chronographs, a small universal instrument by Bamberg, a Zöllner photometer, a transit instrument and a vertical circle, both made by Repsold, and furnished with objectives of 96 millimètres diameter. With the transit instrument he determined the right ascensions of a large number of stars of the 7th magnitude and above.

In 1888, on reaching the age of 65 years, Schultz resigned his position at Upsala and retired to Stockholm. Everything seemed to promise his enjoyment of many years of repose; but during the winter of 1889–90 he was attacked by the epidemic of influenza which then invaded Sweden, and the recovery from this illness left him with an affection of the heart, from which he succumbed on May 8, 1890.

At the opposition of *Mars* in 1862 Schultz took part in observations organised for the determination of a more exact value of the solar parallax. The observations, which were made with a filar micrometer on the Steinheil equatoreal, were published in the *Jahres-Schrift* of the University of Upsala in 1862. The combination of his observations with those made at Santiago gave a value of 8″·87 for the solar parallax.

Schultz made many observations of planets and comets, but the most important work which he has contributed to astronomy is an extensive series of micrometrical measurements of the positions of nebulæ. The first portion of this work, which is written in English, entitled *Micrometrical Observations of* 500 *Nebulæ*, was published in 1874 in the 3rd series of the *Nova Acta* of the Royal Society of Sciences of Upsala; the remaining portion, containing between 200 and 300 observations, is not yet published, but will shortly appear. "The primary object of the work appears to have been the formation of a catalogue of nebulæ whose right ascensions and declinations should be sufficiently exact to serve for a future determination of their proper motions." The observations were commenced in 1863, and, so far as they are published, were continued until 1874. They consist of determinations by means of a wire micrometer of differences of right ascension and declination between 500 nebulæ and neighbouring stars of sufficient brightness to admit of being conveniently observed on the meridian. The whole number of single measures upon which the results depend amounts to about 12,000. Many difficulties were attendant upon making such observations in the latitude of Upsala, particularly the long twilight at the most favourable seasons, and the brilliant auroræ boreales in the winter. Schultz significantly remarks that "the aurora is in many instances as formidable an enemy to such observations as moderate moonlight." Notwithstanding these

1891MNRAS..51..205.

difficulties, the discussion of the observations indicates that the probable errors are very small, and, from the care and skill exercised throughout the work, it has justly been considered as one of the most important and valuable of its kind yet accomplished.

In vol. xxxv. of the *Monthly Notices* Schultz published a "Preliminary Catalogue of Nebulæ Observed at Upsala," in which he gave the mean right ascension and declination for 1865·0 of 512 nebulæ. A catalogue of 440 comparison stars used for the observations was published at Stockholm in the *Bihang till Svenska Vetenskaps Akademiens Handlingar* in 1875.

In the same volume of that publication will be found a complete research on the orbit of the minor planet *Alexandra*, entitled "Normalorter och Oskulerande Element för Planeten *Alexandra* (54)." Besides other contributions to astronomy, Schultz published in 1873 a micrometrical determination of the positions of 104 stars in the cluster 20 H viii. *Vulpeculæ*, and in 1875 he contributed to the *Ofversigt* of the Stockholm Academy a paper on Hansen's Theory of Perturbations.

Professor Schultz married in the year 1860 a daughter of the celebrated optician Steinheil, of Munich, who, with their children, two sons and a daughter, survives him.

He was elected an Associate of this Society November 10, 1882.